ReQuest Interface Guide #2A

Crestron Control of AudioReQuest™ through an RS232 Serial Port

Version: 4.0.2
Last Modified:
03/07/2003 – Added Play on DoubleClick; various typos and corrections
02/04/2003 – Updated for 1.8.1 commands, full panel redesign, addition of AlbumArt™
11/21/2002 – Updated for 1.7.52 commands
10/09/2002 – Updated for 1.7.11 commands

Table of Contents:

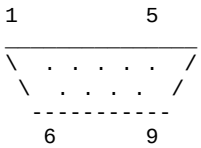
Page 2: Introduction
Page 4: One-Way Control
Page 5: Two-Way Control
Page 6: AudioReQuest Macro join descriptions
Appendix A: Troubleshooting
Appendix B: Serial Commands

Rear Serial Port Settings (for control):

9600 Baud, 8 bits, No Parity, 1 Stop Bit.
No Flow Control

Nitro, Fusion, Tera (Pro & Zone):

Rear Control Serial Port	
Pin #2	RxD
Pin #3	TxD
Pin #5	GND



ARQ1 MiniJack Connector

Tip -> Pin #2	RxD
Ring -> Pin #3	TxD
GND -> Pin #5	GND

Introduction:

This document outlines the serial port protocol and how to interface to it from Crestron control processors and touch panels. This document is designed to be used in conjunction with the Single Zone Crestron macro version 4.0.2. For Multi-Zone control, please download the AudioReQuest Multi-Zone macro and accompanying documentation from www.request.com.

Play on DoubleClick:

Beginning in version 4.0.2 of the ARQConnect™ Crestron package, clicking on a song name will start that song. The entire list that song belongs to will be added to Now Playing. Thus, if a user "drills-into" an album and DoubleClicks the name of a song, that song will begin to play followed by the other songs on that album.

AlbumArt™ with Video-enabled Crestron Panels:

With ARQ OS v1.8.1, ReQuest introduces the ability to add AlbumArt to the ARQ. The new ARQConnect 4.0.2 panels have been designed to display this cover art using the video input on enabled Crestron touchpanels.

In order to use AlbumArt, a new theme MUST be installed on EVERY AudioReQuest! This theme is zipped into a file named *AlbumArtLarge.zip* and is included with the Crestron demo program you downloaded (*ARQConnect_Crestron_SingleZone_Demo_v_4_0_2.zip*). When you import the demo program into SIMPL, *AlbumArtLarge.zip* is placed in the same folder as the Crestron project (*c:\Crestron\Simpl\Programs* by default). To install this theme on an AudioReQuest, follow these steps:

1. Unzip *AlbumArtLarge.zip* into its own folder on your computer.
2. Connect the AudioReQuest to your local network if it is not already. This process can **not** be done remotely over the internet.
3. Open a web browser and enter *\\ARQ-IP-Address\Themes* into the address bar, where *ARQ-IP-Address* is the IP Address of your AudioReQuest. If you do not know the IP address of your AudioReQuest, you may enter the ARQ Name. Both of these can be found by going to **Menu→Settings→Network Configuration** on the AudioReQuest.
4. Copy the four (4) theme files you unzipped into the Themes folder on the ARQ
   N2AlbumArtLarge.dat *P2AlbumArtLarge.dat*
   N2AlbumArtLarge.raw *P2AlbumArtLarge.raw*
5. Press **Alt + 7** on the AudioReQuest remote control to scroll through the themes. Continue pressing **Alt + 7** until you see **Loading AlbumArtLarge** on the TV or Monitor. No reboot is necessary.
   NOTE: If you do not have a TV or Monitor connected to the AudioReQuest, you can use the video input to the Crestron panel. The AlbumArtLarge theme has the same size image on both the Browse and Player screens, whereas the default AlbumArt theme has a smaller picture on the Browse page.

To remove AlbumArt functionality from the Crestron panel, open the VT-Pro project and delete the video window from both the Browse and Player pages (only Player for the TPS-2000). You can do this by simply clicking on the grey box in the upper right corner and pressing Delete. A graphic located behind the video window will come forward, taking the place of the AlbumArt.

Playlist Creation from a TPS-4500:

The Manage Tab has been removed. It has been replaced by subpages that allow control of the Jukebox. Users can then create a permanent Playlist from the Jukebox contents by pressing the *Make Playlist* button on the *Jukebox Controls Subpage*. Once the Playlist is named, it will be accessible through QuickPlay Direct Playlist Access as well as through normal Navigation.

Player Page Additions:

Several QuickPlay™ commands have been added to the panels:

Next & Previous commands for ***Artist, Album, & Genre*** are now available

Also, Elapsed Time has been enabled. There is a progress bar on select panels that fills up as the song plays. Users can touch anywhere on the progress bar to immediately jump to that section of the song – great for skipping blank space before secret tracks!

NOTE: Time-Elapsed is NOT recommended for X-Series processors!

Browse Page Additions:

The Browse page now functions very much like the Manage page in our previous release. Touching any one of the 8 lines of text once will highlight that item. Touching the same line again will *"drill into"* that item. In conjunction with our new Play Now feature, this interface eliminates the need to navigate through the hierarchy tree all the way to the song level in order to play music. From the list of Artists, for example, simply touch an artist name once to highlight it, then press Play Now, and all songs by that artist will begin playing. Touch a different artist once and press Add to Jukebox, and all songs by that artist are queued up to play at the end. This interface makes playback as easy as 1-2-3.

ReQuest also introduces their new Extended Search functionality. Previously, with the search keyboard open, touching the letters "T", "H", "E" would jump you to the first song, artist, or album name starting with the letter "T", then "H", and ending on items starting with the letter "E". With the Extended Search mode, you can narrow your search for more accurate results. Touching the letters "T", "H", "E" will narrow your search to all items starting with the letters "THE". You also have the ability to scroll through the items that match your search by pressing the **Next Match** button. This is also great for finding specific items in un-alphabetized lists, such as user playlists.

eControl2 Support:

Crestron's new eControl2 is now supported in the AudioReQuest Crestron demo program. The eControl2 project we have designed is modeled after the TPS-4500, and can be downloaded from www.request.com. In order to use eControl2, you will need to obtain an eControl2 license from Crestron. The following steps will help guide you through configuring and running the AudioReQuest eControl2 interface.

Configuring the VT-Pro XPANEL for eControl2:

1) Open the XPANEL project in VT-Pro (*econtrol2_arq_4_0_2.vtp*)
2) Click the **Edit** pull-down menu and select **Project Properties…**
3) Click the **Web** tab
4) Enter the IP ID for the eControl2 pages. The demo program uses 3
5) Enter the IP Address of the Crestron processor
6) Click **OK**
7) Compile the project

8) Open **Viewport** and select **File Transfer→Send Webpages…**
9) Choose the options to **Transfer Entire Project** to **Internal Flash** and click **OK**
10) It will prompt you to select the main page. Click **OK** and navigate to the directory where the XPANEL project is saved. Open the folder named *econtrol2_arq_4_0_2.xweb*
11) Select the file called **Main.html** and click **OK**. This will upload the project to the control system.

Configuring the SIMPL Project for eControl2:

1) Open the "*Single Zone v4_0_2 Demo.smw"* project
2) Switch to **Configure** view
3) Under **Ethernet Units** in the System View, right-click the **eControl PC Interface** and select **Configure**
4) Select the **IP Net Address** tab
5) Enter the same IP ID and IP Address used in steps 4 & 5 under **Configure the VT-Pro XPANEL for eControl2** above
6) Select **OK**
7) Compile and Upload the project
8) Connect to the Crestron Processor with Internet Explorer to verify that it works

Feedback State Memory:

In our continuing effort to eliminate common problems, ReQuest proudly announces the addition of **Feedback State Memory**. The first time you connect to the AudioReQuest serially through Crestron, a connection string is sent that tells the ARQ in what format you would like the data to be sent (typically *Compressed GUI data* with *Constant Player Feedback* and *Elapsed Time ON*). Any subsequent time you connect, the ARQ will remember the feedback format you had previously requested and use that. Even after you disconnect the power, such as in the event of a power outage, the AudioReQuest will remember your previous feedback state and send text to the touchpanel without you needing to resend the connection string.

NOTE: It is still recommended that you tie the ARQ-CONNECT signal to the AudioReQuest source button on your panel to avoid any potential problems.

One-Way Serial Control:

AudioReQuest can be controlled by only sending serial commands to it. This is useful for interfacing to control systems that don't use any feedback, such as keypads and one-way remote controls like the wireless Crestron ST touch panels.

Single Button Interface Examples:

a. Next Playlist (requires 1.7.0 or higher)

When the button is pressed, the AudioReQuest will cycle through the available custom Playlists like tuner presets. It will automatically return to the first Playlist after the last Playlist is reached.

*[NEXT-PLAYLIST **(0x30,0x9E)**]*

b. Next Genre (requires 1.7.52 or higher)

If your end-user prefers to have access to Genres instead of custom Playlists, consider using the *Next Genre* command. This ensures that any songs that are added to the system are automatically available without the user having to add them to a Playlist. Plus, no initial setup is involved, since the AudioReQuest automatically categorizes the music.

*[NEXT-GENRE **(0x30,0x6C)**]*

c. Random Music

When the user walks up to a Keypad and presses "ARQ" button AudioReQuest will start playing a random song from the entire collection. If music is already playing then AudioReQuest will go to the next random song.

*[RANDOM-IN **(0x30,0x80)**]*

Multiple-Button One-Way Interface Examples:

Crestron's STS wireless remote is a good example of a one-way remote control that, when used with the AudioReQuest video output, can be an easy to use interface. Using the JUMP-TO-PLAYLIST QuickPlay commands, you can easily create a page that simply allows a user to immediately access their favorite playlists, without two-way feedback.

Two-Way Serial Control:

On www.request.com are examples for the Crestron control systems that can in real-time display the same information as on the Video output of the AudioReQuest, allowing you to browse and access the entire collection of the AudioReQuest.

Tip:
If you connect the ARQ Serial Port to a PC Serial Port, run a terminal program and type '3','c','3','g' you will be requesting data and will see the same feedback as a control system would.

a. Requesting Data from AudioReQuest

The first step for Two-Way serial control is to request data from AudioReQuest. What is used in the Crestron demo programs is the "Delimited GUI" format. When the demo program is started and the user goes into the AudioReQuest portion, the command is sent from the control system to the AudioReQuest.

The Crestron demonstration programs send an ARQ-CONNECT signal to request data. If this command is not sent then AudioReQuest will ***not*** transmit feedback!! When you are integrating the Macro into your program this means pulsing the [START-SERIAL-COMMUNICATIONS] input.

Sample CT-1000 Browse Screen

b. Processing the Serial data from AudioReQuest

Crestron processes the data coming from AudioReQuest in SIMPL+. It processes the incoming stream of text, finds and cuts out the appropriate data, and then sends the information to the touch panels. If you are having trouble getting text feedback double check to make sure the SIMPL+ module is being compiled correctly.

c. Displaying the Serial data from AudioReQuest

If you are using more than 3 or 4 touchpanels, be sure to use an "Indirect Text Broadcast" to send serial data to each touch panel. This will increase the speed that text appears on the touch panel. This will send out serial text to all touch panels at once, instead of to each individually.

Note 1: If you use the Indirect Text Broadcast you must delete the serial signals from the touch panel serial joins under Network Modules.

Sample CT-1000 Player Screen

AudioReQuest MACRO Inputs:

Inputs	Version	Description
ARQ-RECEIVE$	1.2.4	Receive line – to be tied to RX on the COM port
BUTTON-CANCEL	1.2.4	Linked to the HOME button – brings you to same place in navigator view every time.
BUTTON-COPY	1.2.4	USE WITH CAUTION - Copies Selected Songs (or where the cursor is if no songs are selected) into playlist. Best if used in LCD MODE for feedback.
BUTTON-DELETE	1.2.4	USE WITH CAUTION - Deletes Selected Songs (or where the cursor is if no songs are selected) Best if used in LCD MODE for feedback.
BUTTON-DOWN	1.2.4	NAV: Move cursor down PLAYER: Next song
BUTTON-EDIT	1.2.4	USE WITH CAUTION - Edits Selected Songs (or where the cursor is if no songs are selected) Best if used in LCD MODE for feedback.
BUTTON-ENTER	1.2.4	NAV: Enter (go into artist, play song etc) PLAYER: Toggle for pause
BUTTON-INFO	1.2.4	Brings up Information. (Best if used in LCD view)
BUTTON-INTRO	1.2.4	Toggle Intro on/off.
BUTTON-JUKEBOX	1.2.4	Adds wherever cursor is to Now Playing to be played later.
BUTTON-LEFT	1.2.4	NAV: Move cursor left PLAYER: Rewind
BUTTON-MODE	1.2.4	NAV: Switch to Player view PLAYER: Switch to NAV view
BUTTON-NOWPLAYING	1.2.4	Go to NOW PLAYING view in NAV mode.
BUTTON-PAUSE	1.2.4	Toggle Pause on/off.
BUTTON-REPEAT	1.2.4	Toggle repeat on/off.
BUTTON-RIGHT	1.2.4	NAV: Move cursor right PLAYER: Fast Forward
BUTTON-SELECT	1.2.4	Selects / Deselect toggle wherever cursor is.
BUTTON-SHUFFLE	1.2.4	Toggle shuffle on/off.
BUTTON-STOP	1.2.4	Stop music currently playing.
BUTTON-THEMES	1.2.4	Switch to the next theme.
BUTTON-UP	1.2.4	NAV: Move cursor up PLAYER: Previous song
BUTTON-VISUALS	1.2.4	Go into visuals mode.
JUMP-DOWN	1.2.4	NAV: Page down PLAYER: Jump into 'random' mode
JUMP-UP	1.2.4	NAV: Page up PLAYER: Jump out of 'random' mode
KEYBOARD 0-9	1.2.4	Numbers 0-9
KEYBOARD A-Z	1.2.4	Alphabet (Lower Case)
KEYBOARD-BACKSPACE	1.2.4	Backspace (Best for LCD mode)

KEYBOARD-SHIFT	1.2.4	SHIFTS any letters pressed for 3 seconds
KEYBOARD-SPACE	1.2.4	Space bar (Best for LCD mode)
NAV-ALBUM	1.2.4	Go to ALBUM view in NAV mode.
NAV-ALL	1.2.4	Go to ALL view in NAV mode.
NAV-ARTIST	1.2.4	Go to ARTIST view in NAV mode.
NAV-CD	1.2.4	Go to CD view in NAV mode.
POWER-OFF	1.2.4	Soft power off.
POWER-ON	1.2.4	Soft power on.
PRESS-LINE-X-FLIP (X=0-7)	1.2.4	Move cursor to a line and perform action on it (send enter command) and flip to PLAYER page.
START-COMMUNICATIONS-TOGGLE	1.2.4	- REQUIRED for feedback Important to PULSE when entering ARQ pages
STOP-COMMUNICATIONS	1.2.4	Not required for serial communications.
VOLUME-DOWN	1.2.4	Decrease ARQ volume.
VOLUME-UP	1.2.4	Increase ARQ volume.
DESELECT-ALL	1.3.1	Deselects songs. Good to do if using the Selected Songs playlist in any way.
DISCRETE-EJECT	1.3.1	Ejects the CD ROM. Works from both NAV and PLAYER.
DISCRETE-FORWARD	1.3.1	Sends Fast Forward command. Works from both NAV and PLAYER.
DISCRETE-NEXT	1.3.1	Sends Next song command. Works from both NAV and PLAYER.
DISCRETE-PAUSE	1.3.1	If playing, then pauses. Does nothing if already paused. Works from both NAV and PLAYER.
DISCRETE-PLAY	1.3.1	Sends play command. Works from both NAV and PLAYER.
DISCRETE-PREVIOUS	1.3.1	Sends Previous song command. Works from both NAV and PLAYER.
DISCRETE-RANDOM-IN	1.3.1	Goes into Random mode from both NAV and PLAYER.
DISCRETE-RANDOM-OUT	1.3.1	Goes out of Random mode from both NAV and PLAYER.
DISCRETE-REPEAT-OFF	1.3.1	Turns Repeat mode off. Works from both NAV and PLAYER.
DISCRETE-REPEAT-ON	1.3.1	Turns Repeat mode on. Works from both NAV and PLAYER.
DISCRETE-REWIND	1.3.1	Sends Rewind command. Works from both NAV and PLAYER.
DISCRETE-SHUFFLE-OFF	1.3.1	Turns Shuffle mode off. Works from both NAV and PLAYER.
DISCRETE-SHUFFLE-ON	1.3.1	Turns Shuffle mode on. Works from both NAV and PLAYER.
DISCRETE-UNPAUSE	1.3.1	If paused, then plays. Does nothing if not paused. Works from both NAV and PLAYER.
RESET-FREEDB	1.3.1	Resets the pending internal freedb lookups.
GOTO-LINE-X (X=0-7)	1.5.91	Moves the cursor to line X. Does not perform any action, just moves the cursor.
REFRESH	1.5.91	Refreshes text. Best if done when going into a page, especially for the first time.

TIME-OFF	1.5.91	Turns the time elapsed off. Useful for decreasing bandwidth.
TIME-ON	1.5.91	Turns the time elapsed on.
BUTTON-MENU	1.6.0	Go to Menu. (Best if used in LCD mode)
DISCRETE-NAVIGATOR	1.6.0	Switch page on ARQ to NAVIGATOR.
DISCRETE-PLAYER	1.6.0	Switch page on ARQ to PLAYER.
DOUBLECLICK-LINE-X (X=0-7)	1.6.0	Moves the cursor to line X. If cursor is already on line X then performs action on that line (sends NEXT command) Good for moving cursor around and navigating for features like 'add to jukebox'
LCD-TEXT-OFF	1.6.0	Turn LCD text off.
LCD-TEXT-ON	1.6.0	Turn LCD text on.
NAV-HOME	1.6.0	Go to Home in navigator mode. If ARQ is not in NAVIGATOR mode this command will switch it.
NAV-JUMP-DOWN	1.6.0	Page down in navigator mode. If ARQ is not in NAVIGATOR mode this command will switch it.
NAV-JUMP-UP	1.6.0	Page up in navigator mode. If ARQ is not in NAVIGATOR mode this command will switch it.
NAV-MOVE-LEFT	1.6.0	Move left in navigator mode. If ARQ is not in NAVIGATOR mode this command will switch it.
PLAYER-DATA-ALWAYS-OFF	1.6.0	Turns above feature off. Will still get player data in PLAYER mode.
PLAYER-DATA-ALWAYS-ON	1.6.0	Player data will be sent in both NAVIGATOR and PLAYER modes. NOTE: On a CMNSX-PRO be sure to pulse the TIME-OFF line as it can overload the serial buffer.
PLAY-NOFLIP	1.6.0	Play song where cursor is without flipping to Player page.
PRESS-LINE-X-NOFLIP (X=0-7)	1.6.0	Move cursor to a line and perform action on it (send enter command) BUT do not flip to PLAYER page.
REQUEST-PLAYER-INFO	1.6.0	Get player information from any mode.
DISCRETE-AUTORIP-OFF	1.7.0	Disable AutoRip. If AutoRip is already disabled, this command is ignored.
DISCRETE-AUTORIP-ON	1.7.0	Enable AutoRip. If AutoRip is already enabled, this command is ignored.
NEXT-PLAYLIST	1.7.0	Begin playing the first song in the next available Playlist.
PLAY-PLAYLIST-N (N=1-10)	1.7.0	Jump directly to Playlist-N without flipping. If no Playlist with that number exists, the command is ignored. For more detail on the QuickPlay commands, please see ReQuest Interface Guide #1A – General IR and RS-232 Serial Port Interfacing
PREVIOUS-PLAYLIST	1.7.0	Begin playing first song in the previous Playlist.
CLEAR-NOW-PLAYING	1.7.11	Stops any currently playing songs and empties the Now Playing list.
CREATE-JUKEBOX-PLAYLIST	1.7.11	Creates a playlist from songs added to the Jukebox. Requires keyboard interface to

		name the playlist.
CAPITAL 0-9	1.7.11	! @ # $ = + & * ( )
CAPITAL A-Z	1.7.11	Letters A-Z (Upper Case)
CAPITAL-APOSTROPHE	1.7.11	Quotation Mark (“)
CAPITAL-COLON	1.7.11	Tilda (~)
CAPITAL-COMMA	1.7.11	Question Mark (?)
CAPITAL-PERIOD	1.7.11	Forward Slash (/)
LOWER 0-9	1.7.11	Numbers 0-9
LOWER A-Z	1.7.11	Letters A-Z (Lower Case)
LOWER-APOSTROPHE	1.7.11	Apostrophe (‘)
LOWER-COLON	1.7.11	Colon (:)
LOWER-COMMA	1.7.11	Comma (,)
LOWER-PERIOD	1.7.11	Period (.)
SHOW-GENRES	1.7.52	Jumps directly to the list of Genres in Navigator
NEXT-GENRE	1.7.52	Begins playing the next Genre. If not currently playing from a Genre list, it will play the first Genre.
PREVIOUS-GENRE	1.7.52	Begins playing the previous Genre. If not currently playing from a Genre list, it will play the last Genre.
BUTTON-SEARCH	1.8.1	Begins an Extended Search. Search remains active until a non-alphanumeric button is pressed.

NEXT-ALBUM	1.8.1	If playing from the Album list, will begin playing the next Album. If playing from the Artist list, will begin playing the next Album by that Artist. If playing from any other list, it will begin playing the first Album.
NEXT-ARTIST	1.8.1	Begins playing the next Artist. If not currently playing from the Artist list, it will play the first Artist.
PLAY-NOW-FLIP	1.8.1	Will begin playing the songs under the currently selected item. When playback begins, the ARQ will flip to the Player page.
PLAY-NOW-NOFLIP	1.8.1	Will begin playing the songs under the currently selected item. When playback begins, the ARQ will remain on the Navigator page.
PRESS-SEEK-BAR	1.8.1	Goes HI when the progress bar is pressed, signaling the macro to use the SEEK-VALUE.
PREVIOUS-ALBUM	1.8.1	If playing from the Album list, will begin playing the previous Album. If playing from the Artist list, will begin playing the previous Album by that Artist. If playing from any other list, it will begin playing the last Album.
PREVIOUS-ARTIST	1.8.1	Begins playing the previous Artist. If not currently playing from the Artist list, it will play the last Artist.
RESET-PLAYLIST-ERROR-FLAG	1.8.1	Resets the DUP-PLAYLIST-ERROR-FLAG output.

RESET-ZONE-ERROR-FLAG	1.8.1	Resets the ZONE-ERROR-FLAG output.
SEARCH-LETTER$	1.8.1	Serial input that contains the letter pressed on the search keyboard during Extended Searching
SEARCH-NEXT-MATCH	1.8.1	Finds the next match to the extended search string.
SEEK-VALUE	1.8.1	Analog input that contains the relative location pressed on the progress bar. Value ranges from 0 to 65535.

AudioReQuest MACRO Outputs:

Outputs	Version	Description
GOTO-NAVIGATOR-PAGE	1.2.4	Goes high when in NAVIGATOR page
GOTO-PLAYER-PAGE	1.2.4	Goes high when in PLAYER page
REPEAT-FB	1.2.4	High when in REPEAT mode
SHUFFLE-FB	1.2.4	High when in SHUFFLE mode
INTRO-FB	1.2.4	High when in INTRO mode
SONG-X-FB (X=0-7)	1.2.4	Line X is high when cursor is on that line. Only one line can be high of the 0-7 lines.
NAVIGATOR-TITLE$	1.2.4	Serial feedback for Title at the top of the NAVIGATOR page
NAVIGATOR-LINE-X$ (X=0-7)	1.2.4	8 lines of Serial feedback that make up the NAVIGATOR page.
PLAYER-SONG-TITLE$	1.2.4	Serial feedback for current song title
PLAYER-ARTIST$	1.2.4	Serial feedback for current ARTIST.
PLAYER-ALBUM$	1.2.4	Serial feedback for current ALBUM.
PLAYER-PLAYLIST$	1.2.4	Serial feedback for current PLAYLIST.
PLAYER-NEXT-TITLE$	1.2.4	Serial feedback for next title.
PLAYER-TOTAL-TIME$	1.2.4	Serial feedback for total time.
PLAYER-ELAPSED-TIME$	1.2.4	Serial feedback for elapsed time.
PLAYER-SONG-PROGRESS	1.2.4	Analog song progress value.
PLAYER-ELAPSED-TIME	1.2.4	Analog elapsed time value.
PLAYER-TOTAL-TIME	1.2.4	Analog total time value.
PLAYER-STATE	1.2.4	Analog Player State: 0=Stop, 1=Play, 2=Pause
ARQ-TRANSMIT$	1.2.4	Transmit line – to be tied to TX on the COM port.
S-SONG-X-FB (X=0-7)	1.6.0	Line X is high when that line is selected. Multiple lines can be selected at any point.
LCD-LINE-ONE$	1.6.0	LCD feedback line one.
LCD-LINE-TWO$	1.6.0	LCD feedback line two.
LCD-LINE-THREE$	1.6.0	LCD feedback line three.
LCD-LINE-FOUR$	1.6.0	LCD feedback line four.
UP-ARROW-FB	1.8.1	Goes HI when more lines exist above the current Navigator lines. Mirrors the Up Arrow graphic on the video GUI.
DOWN-ARROW-FB	1.8.1	Goes HI when more lines exist below the current Navigator lines. Mirrors the Down Arrow graphic on the video GUI.
DUP-PLAYLIST-ERROR-FLAG	1.8.1	Goes HI when attempting to create a Playlist

		by the same name as an already existing Playlist.
ZONE-ERROR-FLAG	1.8.1	Goes HI when attempting to create a Playlist on an ARQ-Zone or a Pro set “Pro as a Zone”.
SEARCH-STRING-OUT$	1.8.1	Serial string of letters that have been typed in Extended Search Mode.

Sample TPS-2000 Navigator Screen

Appendix A: Troubleshooting

a. Can't establish one-way Serial communication:

- Make sure Serial settings are: 9600 Baud, 8 bits, No Parity, 1 Stop Bit. **No Flow Control**

- Double check to make sure flow control is turned off.

- If you connect the ARQ's Rear Serial Port to a PC Serial Port, run a terminal program at the above baud rate and type '3','c','3','g' you will see feedback on the terminal program. This is a good sanity check to verify a good cable.

- If you have an ARQ1 make sure it has a serial port. There were early models that did not have a serial port. Call ReQuest Multimedia with the hardware version if you are not sure. *(You can find the hardware version in MENU->SYSTEM INFORMATION)*

- Check to make sure the AudioReQuest is not encoding or doing any File Transfers.

- If you are trying to establish communication with a ZONE though serial using the included cables and you received your zone before December 15th then try putting a NULL Modem adapter (the wrong cable was included during that time frame on ZONE'S)

b. Have one-way control, now can't get any text out of AudioReQuest onto my Crestron touch panel:

- Make sure you are sending the "Data Request" command. AudioReQuest will not send any data until it is requested. The most commonly used data request (used in all demo Crestron Programs) is Delimited GUI. Send the following hex numbers and you should see feedback: *[**0x33,0x63**] [**0x33,0x67**]*. In the ARQ Crestron Macro this is the START-COMMUNICATIONS line. Make *sure* that this is being sent in Test Manager.

- If you connect the ARQ's Rear Serial Port to a PC Serial Port, run a terminal program and type '3','c','3','g' you will see feedback on the terminal program. Now, if you connect it back to the control system and it works (shows text on touch panel) it is because you did a 'Data Request' in the terminal program. Power off/on the ARQ and Crestron control processor and if there is no feedback the 'Data Request' command is not being sent.

- Check the firmware version in AudioReQuest. *(You can find the software version in MENU->SYSTEM INFORMATION)* Much of the feedback sent requires firmware version 1.6.0 or higher. *(Software updates can be done either by CDROM or online)*

- Check www.request.com under SUPPORT->DOWNLOADS to make sure you have the latest version of the ARQ Crestron Demo Program and corresponding touch panel files.

- Download and run the ARQ Crestron demo program available on our web site on both the touch screen and the Control Processor. This will eliminate any errors made when integrating the AudioReQuest Macro into your Crestron program and will make debugging easier.

c. Getting garbage text or lines not refreshing on Crestron Touch panels:

- If you have a 'busy' system (lot's of touch panel, lighting, etc) and are plugged into a built in Serial Port on the back of a CNMSX control series processor then you are most likely overflowing the buffer (255 Bytes) that goes with the internal serial port. The best way to fix this is to add an internal CNX-COM2 card. This problem has been fixed on the "2" series of processors from Crestron as each Serial Port has an 8k buffer.

d. When I integrate the AudioReQuest Crestron Demo Program into my Crestron program all the touch panels flip to the AudioReQuest pages:

- This is because AudioReQuest actually flips the pages of its macro. This is to make sure that the two systems are in synch. See the page flip section of the Two-way Serial Control portion of this document for details on buffering the page flips to be touch panel specific.

- This problem has been fixed in version 1.6.0 of the AudioReQuest firmware. Check www.request.com for a new Macro and demonstration program.

e. Sometimes the time stops elapsing and buttons stop responding on a Crestron Touch panel:

- This is because older versions of the AudioReQuest Crestron macro actually drive the page flips. If the AudioReQuest is in 'Navigator' mode and the Crestron Touch panel is on the 'Player' page then nothing will work. Double check that the Crestron panels and the AudioReQuest are "in synch", i.e. both on Player.

f. The whole macro seems really sluggish. The text is being drawn slowly on the touch screens:

- If there are a lot of touch panels attached to one control processor then make sure you are using an "Indirect Text Broadcast" to send the serial data out to the touch panels. This does a broadcast of serial text to all of the touch panels instead of sending each line to each touch panel individually.

g. When I go into the ARQ-Crestron Macro on my touchpanel nothing happens:

- When you go into the Macro be sure to pulse the [START-SERIAL-COMMUNICATIONS] signal. This should update all the information on the touch panel, as well as flip it to the correct screen.
- You may also want to try to navigate. Occasionally after a program or touchpanel loading, the indirect text doesn't update automatically.

h. What do I do if I go through all of these and I still can't get it to work?

- Call us at 1-800-236-2812 and we would be glad to help you!

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Complete listing of Serial Port codes:

Discrete Commands	
Action	**Command**
Power-ON	0x30, 0x73
Power-OFF	0x30, 0x74
Deselect	0x30, 0x76
Random-IN	0x30, 0x80
Random-OUT	0x30, 0x7F
Pause-ON	0x30, 0x84
Pause-OFF	0x30, 0x81
Shuffle-ON	0x30, 0x85
Shuffle-OFF	0x30, 0x82
Repeat-ON	0x30, 0x86
Repeat-OFF	0x30, 0x83
Previous Song	0x30, 0x87
Next Song	0x30, 0x89
Fast Forward	0x30, 0x88
Rewind	0x30, 0x8A
Eject	0x30, 0x8B
Play	0x30, 0x8C
Goto-Navigate	0x30, 0x8E
Goto-Player	0x30, 0x8F
Enter-No Flip	0x30, 0x8D
Auto Rip On	0x30, 0x92
Auto Rip Off	0x30, 0x93
Start-TVout	0x30, 0x77
Clear-Now-Playing	0x30, 0xA0
Record-No-Edit	0x30, 0x90
Jump To Selected Songs	0x30, 0xA6
Create-Empty-Playlist	0x30, 0xA7
Create-Now Playing-Playlist	0x30, 0xA8
Create-Selected Songs-Playlist	0x30, 0xA9
Jump To Playlists	0x30, 0x69
Jump to Genres	0x30, 0x6A
Previous Genre	0x30, 0x6B
Next Genre	0x30, 0x6C
Continuous-ON	0x30, 0x3C
Next Artist	0x30, 0xAA
Previous Artist	0x30, 0xAB
Next Album	0x30, 0xAC
Previous Album	0x30, 0xAD
Play Playlist 1	0x30, 0x94
Play Playlist 2	0x30, 0x95
…	…
Play Playlist 10	0x30, 0x9D
Next Playlist	0x30, 0x9E
Previous Playlist	0x30, 0x9F
*Direct Playlist Access -No Flip	(0x43, 0xN)
*Direct Playlist Access –W/ Flip	(0x42, 0xN)

Action	Command	Action	Command	Action	Command
Mode	0x30, 0x01	Symbol “@”	0x30, 0x69	Symbol “~”	0x30, 0x73
Menu	0x30, 0x02	Symbol “#”	0x30, 0x6A	Symbol “:”	0x30, 0x74
Power (TOG)	0x30, 0x03	Symbol “$”	0x30, 0x6B	Symbol “ ” ”	0x30, 0x75
Stop	0x30, 0x0E	Symbol “*”	0x30, 0x6C	Symbol ” ‘ “	0x30, 0x76
Pause (TOG)	0x30, 0x0F	Symbol “/”	0x30, 0x6D	Symbol “=”	0x30, 0x77
Record	0x30, 0x10	Symbol “(“	0x30, 0x6E	Symbol “&”	0x30, 0x78
Shuffle (TOG)	0x30, 0x11	Symbol “)”	0x30, 0x6F	Symbol “!”	0x30, 0x79
Repeat (TOG)	0x30, 0x12	Symbol “_”	0x30, 0x70	Symbol “?”	0x30, 0x7A
Cancel	0x30, 0x13	Symbol “-“	0x30, 0x71	Symbol “,”	0x30, 0x7B
Select (TOG)	0x30, 0x14	Symbol “+”	0x30, 0x72	Symbol “.”	0x30, 0x7C
Previous / Up	0x30, 0x15				
Forward/Right	0x30, 0x16	Letter “a”	0x30, 0x23	Letter “A”	0x30, 0x41
Next / Down	0x30, 0x17	Letter “b”	0x30, 0x24	Letter “B”	0x30, 0x42
Rewind / Left	0x30, 0x18	Letter “c”	0x30, 0x25	Letter “C”	0x30, 0x43
Enter / Pause	0x30, 0x19	Letter “d”	0x30, 0x26	Letter “D”	0x30, 0x44
Volume Up	0x30, 0x1A	Letter “e”	0x30, 0x27	Letter “E”	0x30, 0x45
Volume Down	0x30, 0x1B	Letter “f”	0x30, 0x28	Letter “F”	0x30, 0x46
Jump Up	0x30, 0x1C	Letter “g”	0x30, 0x29	Letter “G”	0x30, 0x47
Jump Down	0x30, 0x1D	Letter “h”	0x30, 0x2A	Letter “H”	0x30, 0x48
CD	0x30, 0x1E	Letter “i”	0x30, 0x2B	Letter “I”	0x30, 0x49
ALL	0x30, 0x1F	Letter “j”	0x30, 0x2C	Letter “J”	0x30, 0x4A
ARTIST	0x30, 0x20	Letter “k”	0x30, 0x2D	Letter “K”	0x30, 0x4B
ALBUM	0x30, 0x21	Letter “l”	0x30, 0x2E	Letter “L”	0x30, 0x4C
NOW PLAYING	0x30, 0x22	Letter “m”	0x30, 0x2F	Letter “M”	0x30, 0x4D
Space	0x30, 0x3D	Letter “n”	0x30, 0x30	Letter “N”	0x30, 0x4E
Back Space	0x30, 0x3F	Letter “o”	0x30, 0x31	Letter “O”	0x30, 0x4F
Visuals	0x30, 0x5B	Letter “p”	0x30, 0x32	Letter “P”	0x30, 0x50
Themes	0x30, 0x5C	Letter “q”	0x30, 0x33	Letter “Q”	0x30, 0x51
Info	0x30, 0x5E	Letter “r”	0x30, 0x34	Letter “R”	0x30, 0x52
Intro (TOG)	0x30, 0x5F	Letter “s”	0x30, 0x35	Letter “S”	0x30, 0x53
Search	0x30, 0x64	Letter “t”	0x30, 0x36	Letter “T”	0x30, 0x54
Delete	0x30, 0x65	Letter “u”	0x30, 0x37	Letter “U”	0x30, 0x55
Copy	0x30, 0x66	Letter “v”	0x30, 0x38	Letter “V”	0x30, 0x56
Jukebox	0x30, 0x68	Letter “w”	0x30, 0x39	Letter “W”	0x30, 0x57
Edit Genre	0x30, 0x6D	Letter “x”	0x30, 0x3A	Letter “X”	0x30, 0x58
Edit	0x30, 0x7D	Letter “y”	0x30, 0x3B	Letter “Y”	0x30, 0x59
Play Now	0x30, 0xAE	Letter “z”	0x30, 0x3E	Letter “Z”	0x30, 0x5A
Play Now-NoFlip	0x30, 0x6E				
Number ‘1’	0x30, 0x04				
Number ‘2’	0x30, 0x05				
Number ‘3’	0x30, 0x06				
Number ‘4’	0x30, 0x07				
Number ‘5’	0x30, 0x08				
Number ‘6’	0x30, 0x09				
Number ‘7’	0x30, 0x0A				
Number ‘8’	0x30, 0x0B				
Number ‘9’	0x30, 0x0C				
Number ‘0’	0x30, 0x0D				

* - Play Playlist N, where N=1 to 255